ABSTRACT:

For many years, research was focused on developing a medical part of human body from polymer as to replace metal. In this study, the aim is to produce a Polyetheretherketone/Hydroxyapatite (PEEK/HA) composite which posses balance mechanical properties and good spreading of bioactive ceramic, hydroxyapatite. The composite consist of 10-30 wt% HA were compounded via nano-single screw extruder and sample for testing were produced by injection molding. Each formulation of HA was treated with (3-Aminopropyl)trimethoxysilanes coupling agent to compare with untreated HA. The result showed that the slight increasing value of Elastic modulus, flexural strength, tensile strength while decreasing flexural modulus for 10 and 20 wt% HA compared to untreated composite. The enhance of bioactivity has been proven with the incorporation of HA into PEEK. SEM-EDX image showed the bulk formation of apatite layers on the composite surface with 30 wt% HA after 3 days immersed in SBF solution. Finally, these composite be capable of being one of the biomedical part seing as the mechanical properties were found to be within the properties of human cortical and cancellous bone.